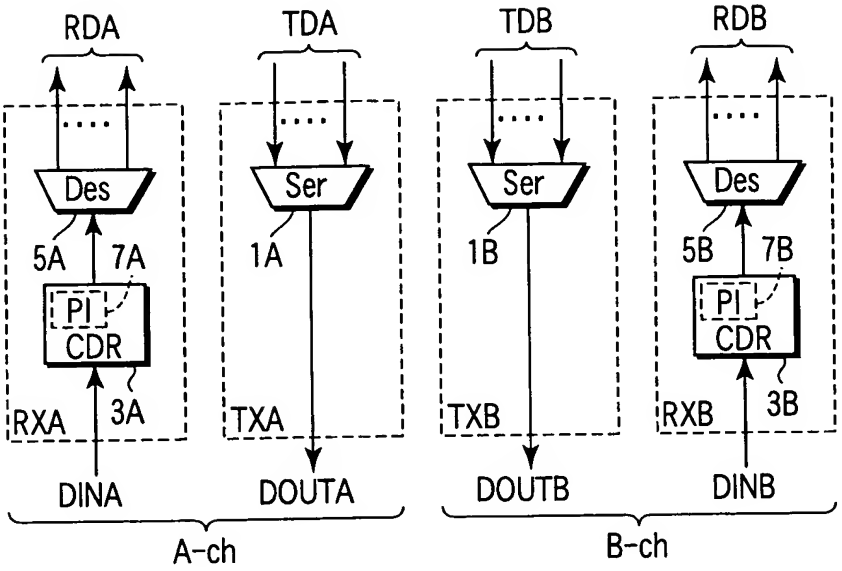
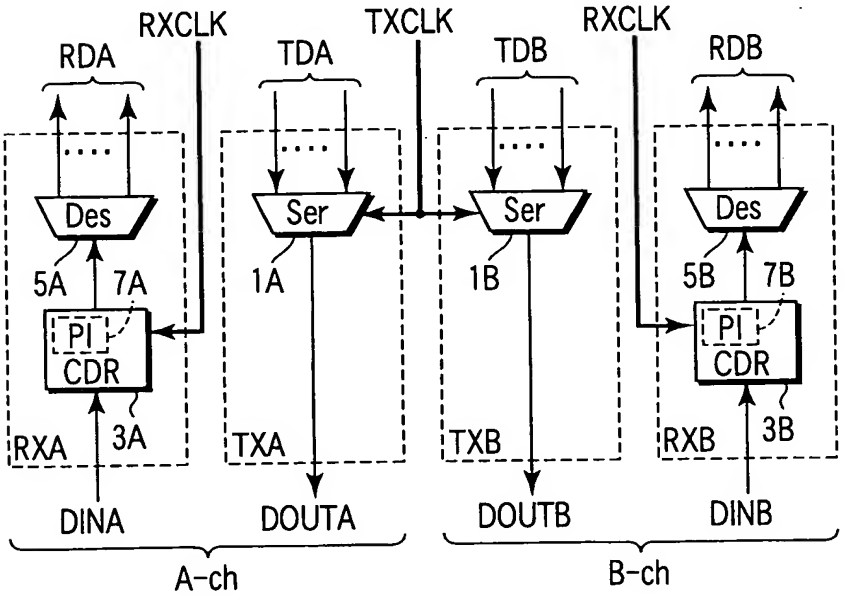


High-speed serial data interface

FIG. 1



Normal operation

FIG. 2

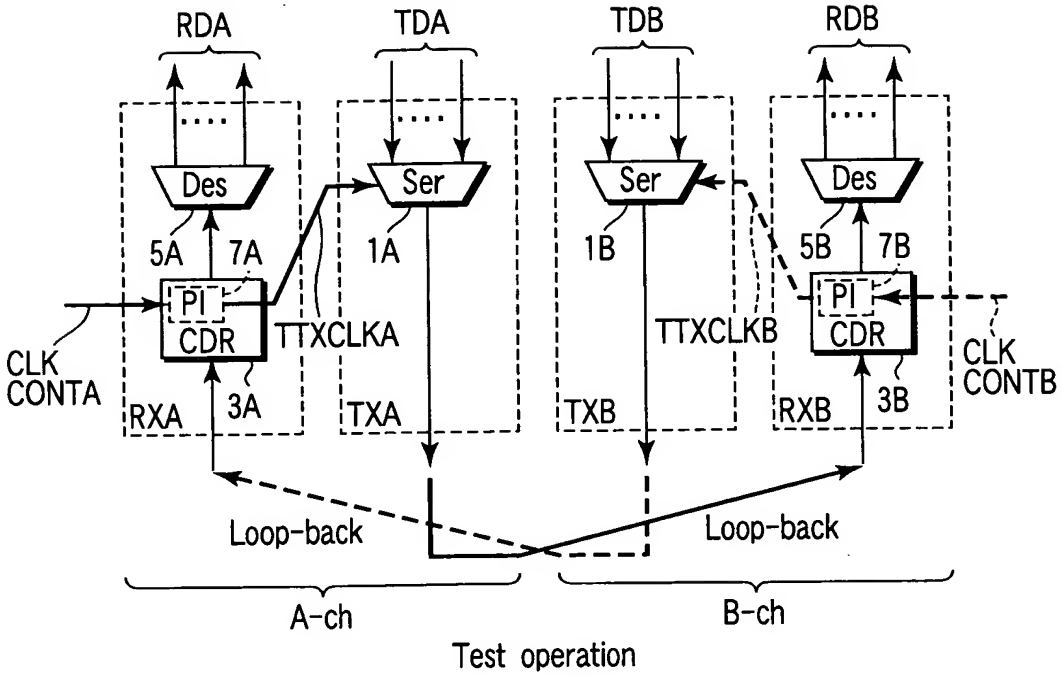

RDA
TDA
TDB
RDB
Des
Ser
Ser
Des
5A
7A
1A
1B
5B
7B
PI
CDR
PI
CDR
TTXCLKA
TTXCLKB
CLK
CONTA
CLK
CONTB
RXA
3A
TXA
TXB
RXB
3B
Loop-back
Loop-back
A-ch
B-ch
Test operation

FIG. 3

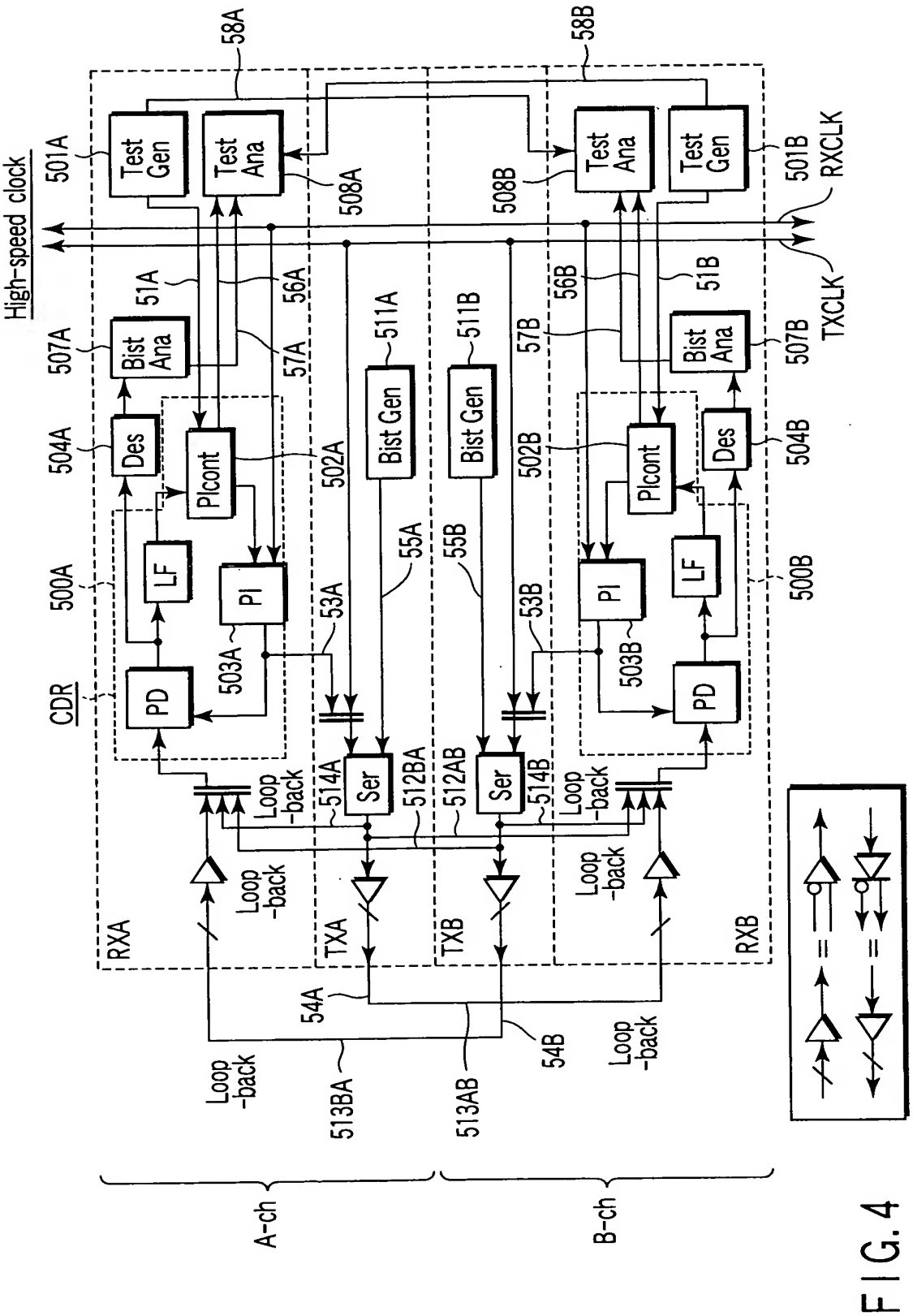

High-speed clock
501A
Test Gen
Test Ana
58A
58B
508A
508B
501B
RXCLK
TXCLK
51A
51B
56A
56B
507A
Bist Ana
57A
57B
507B
504A
Des
Plcont
502A
502B
Bist Gen
511A
511B
504B
500A
LF
PI
53A
53B
55A
55B
500B
CDR
PD
503A
503B
Loop -back
514A
514B
Ser
512BA
512AB
RXA
TXA
TXB
RXB
54A
54B
513BA
513AB
A-ch
B-ch

FIG. 4

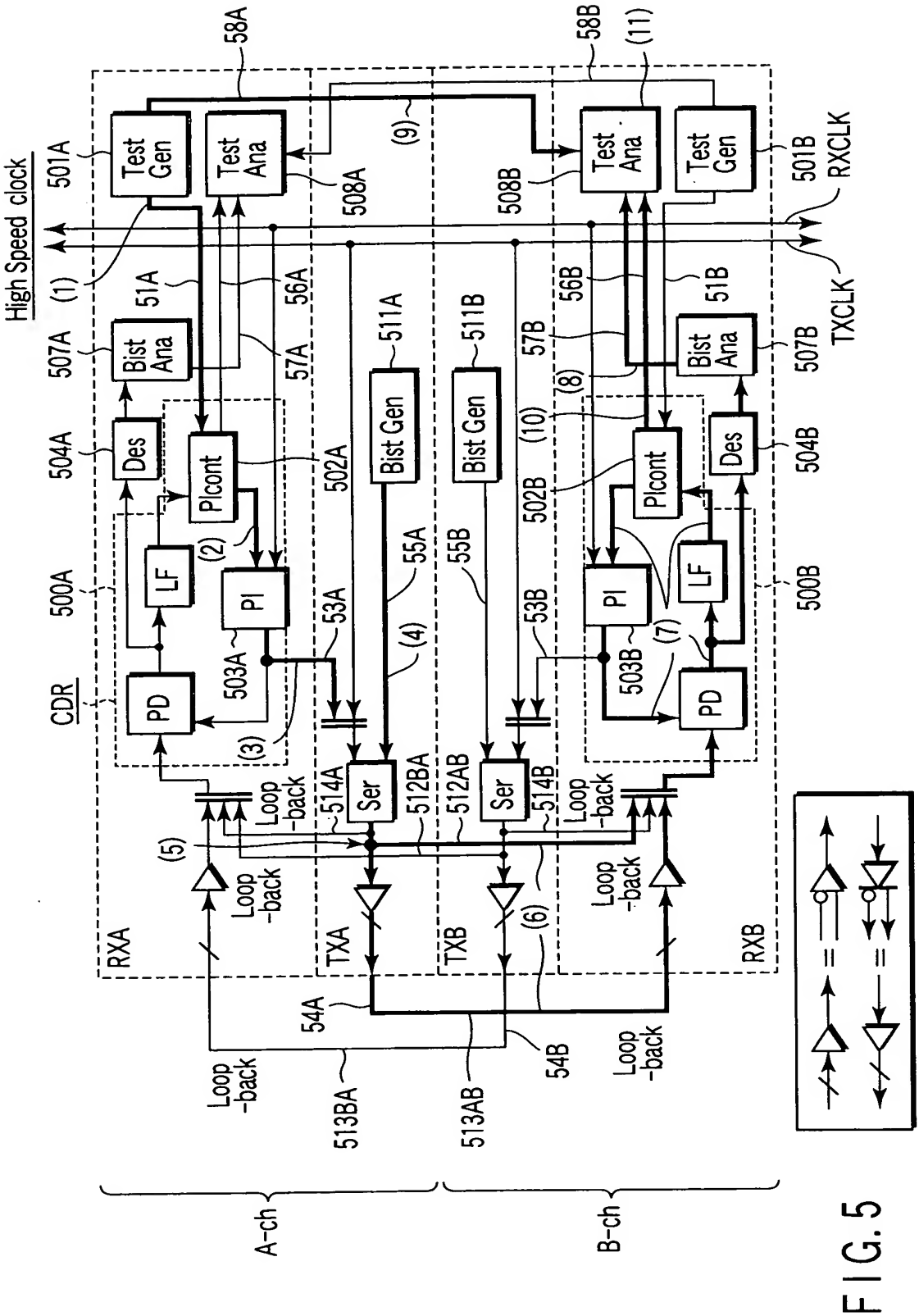

High Speed clock
CDR
RXA
TXA
TXB
RXB
A-ch
B-ch
Test Gen
Test Ana
Bist Ana
Bist Gen
Des
Plcont
LF
PI
PD
Ser
Loop -back
58A
58B
501A
501B
RXCLK
TXCLK
51A
51B
56A
56B
57A
57B
507A
507B
504A
504B
502A
502B
511A
511B
500A
500B
503A
503B
53A
53B
55A
55B
512BA
512AB
514A
514B
513BA
513AB
54A
54B
(1)
(2)
(3)
(4)
(5)
(6)
(7)
(8)
(9)
(10)
(11)

FIG. 5

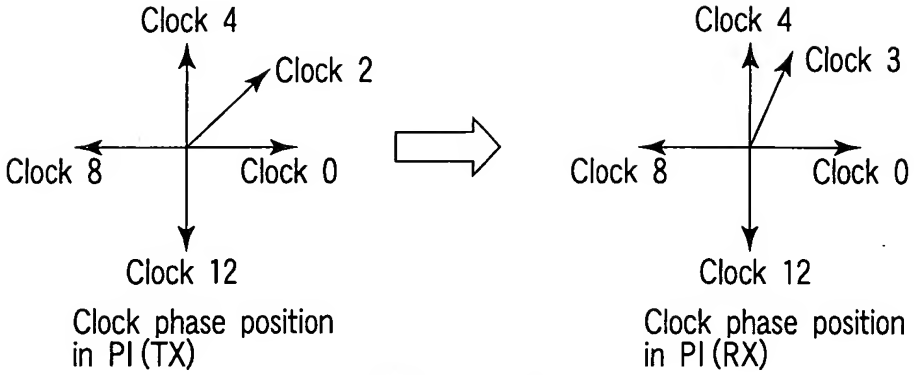


FIG. 6

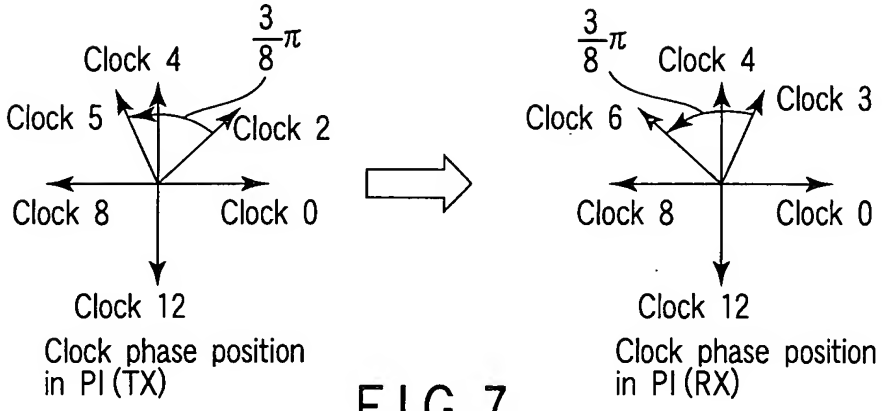


FIG. 7

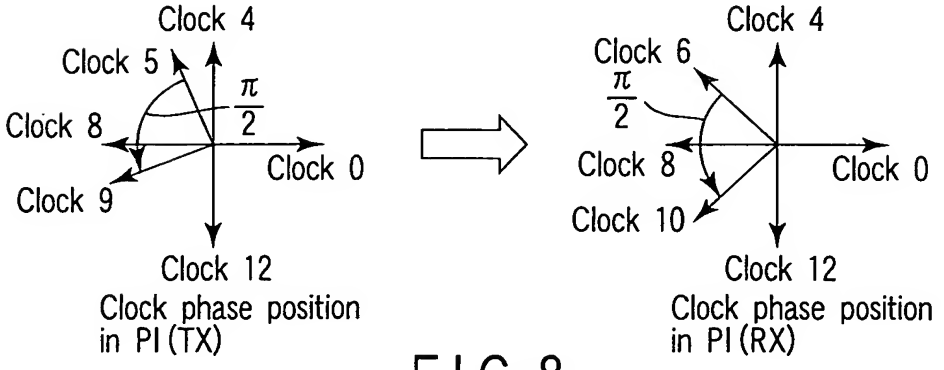


FIG. 8

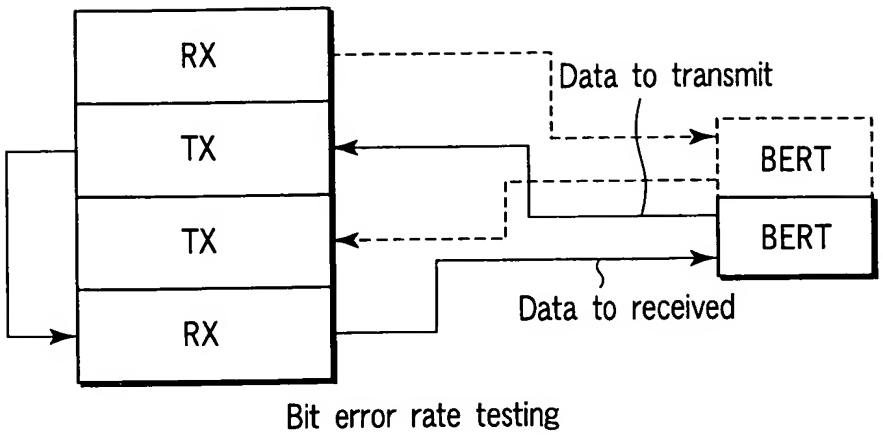

RX
TX
TX
RX
Data to transmit
BERT
BERT
Data to received
Bit error rate testing

FIG. 9

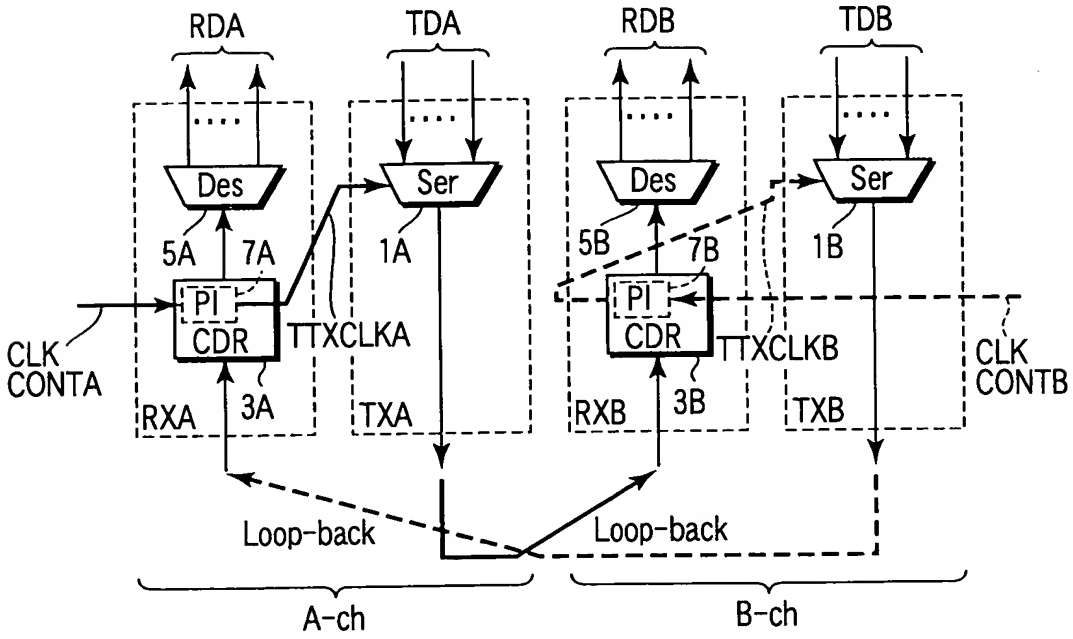

RDA
TDA
RDB
TDB
Des
Ser
Des
Ser
5A
7A
1A
5B
7B
1B
PI
CDR
PI
CDR
CLK
CONTA
TTXCLKA
TTXCLKB
CLK
CONTB
RXA
3A
TXA
RXB
3B
TXB
Loop-back
Loop-back
A-ch
B-ch

FIG. 10

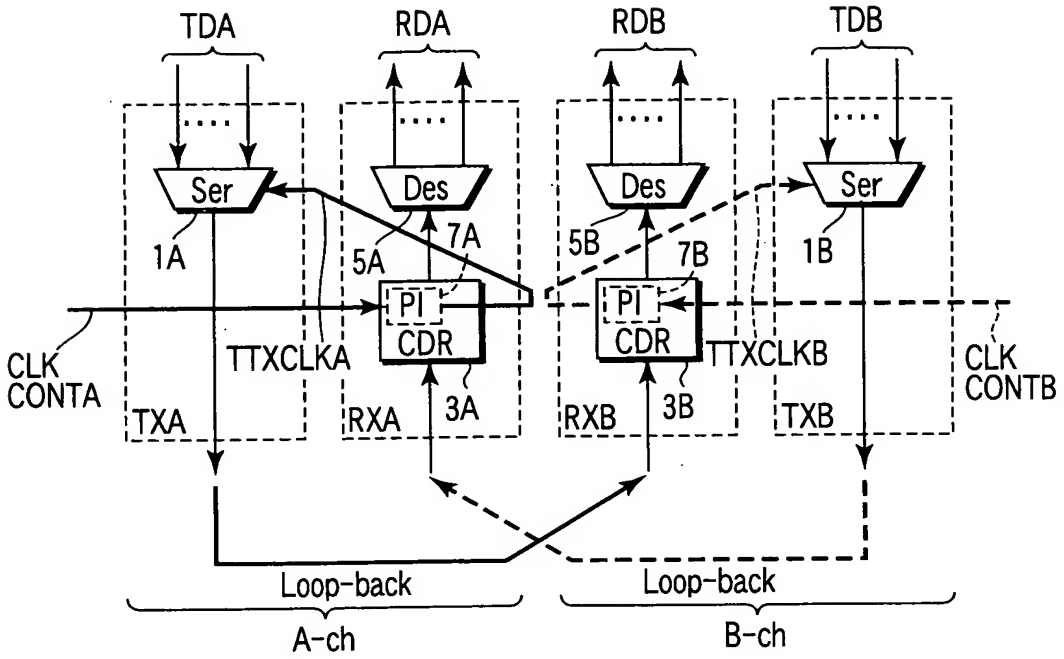

TDA
RDA
RDB
TDB
Ser
Des
Des
Ser
1A
5A
7A
5B
7B
1B
PI
CDR
PI
CDR
CLK
CONTA
TTXCLKA
TTXCLKB
CLK
CONTB
TXA
RXA
3A
RXB
3B
TXB
Loop-back
Loop-back
A-ch
B-ch

FIG. 11

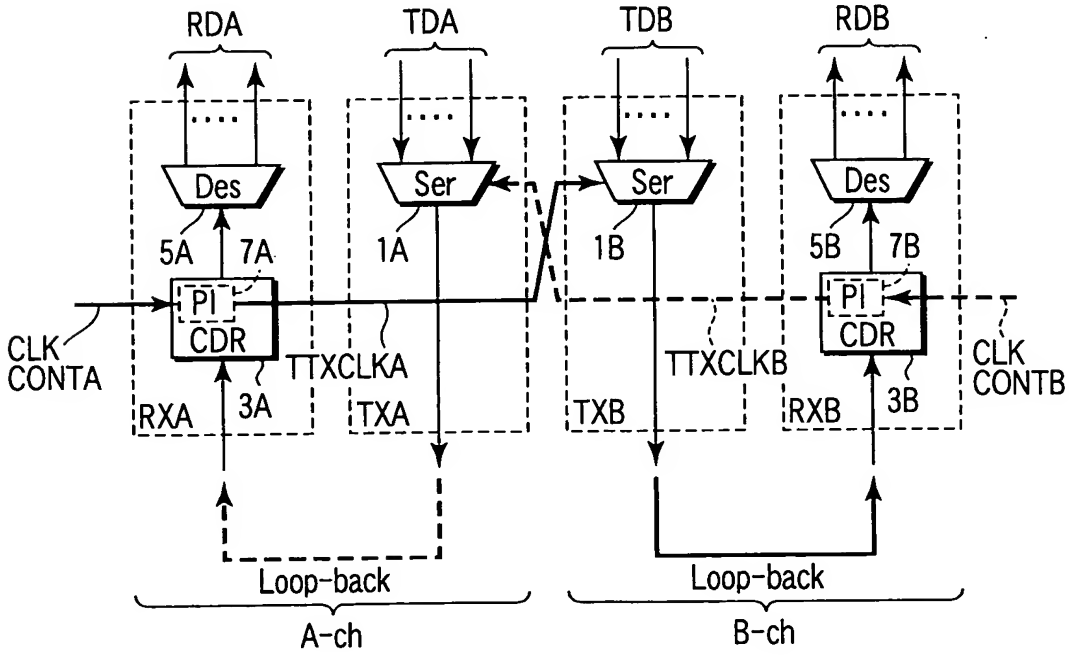

RDA
TDA
TDB
RDB
Des
Ser
Ser
Des
5A
7A
1A
1B
5B
7B
PI
CDR
PI
CDR
CLK
CONTA
TTXCLKA
TTXCLKB
CLK
CONTB
RXA
3A
TXA
TXB
RXB
3B
Loop-back
Loop-back
A-ch
B-ch

FIG. 12

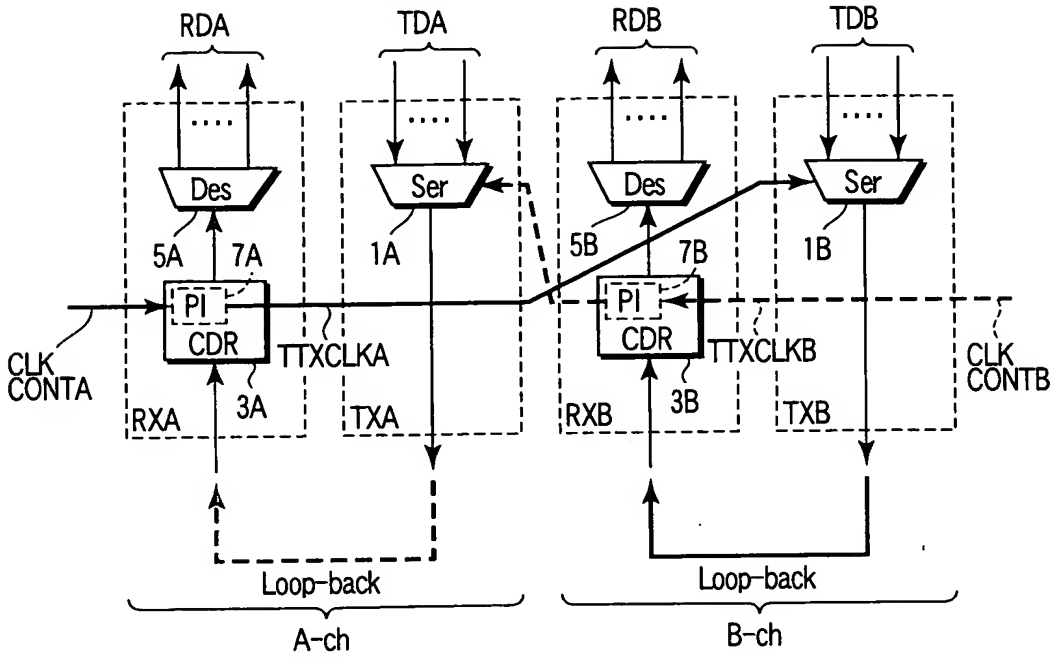

RDA
TDA
RDB
TDB
Des
Ser
Des
Ser
5A
7A
1A
5B
7B
1B
PI
CDR
PI
CDR
CLK
CONTA
TTXCLKA
TTXCLKB
CLK
CONTB
RXA
3A
TXA
RXB
3B
TXB
Loop-back
Loop-back
A-ch
B-ch

FIG. 13

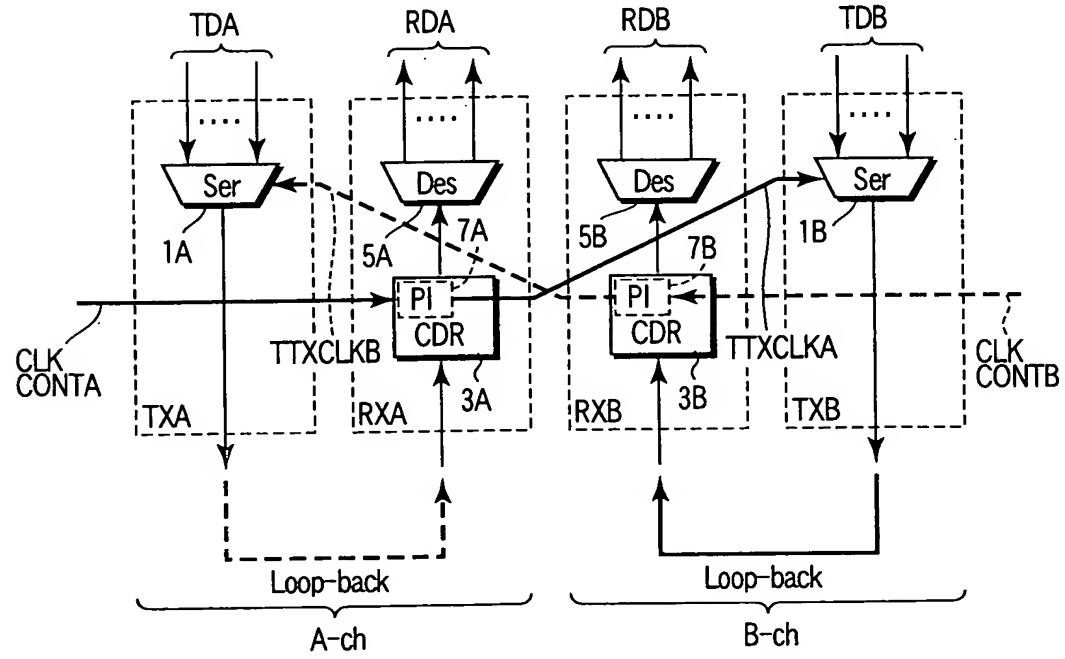

TDA
RDA
RDB
TDB
Ser
Des
Des
Ser
1A
5A
7A
5B
7B
1B
PI
CDR
PI
CDR
CLK
CONTA
TTXCLKB
TTXCLKA
CLK
CONTB
TXA
RXA
3A
RXB
3B
TXB
Loop-back
Loop-back
A-ch
B-ch

FIG. 14

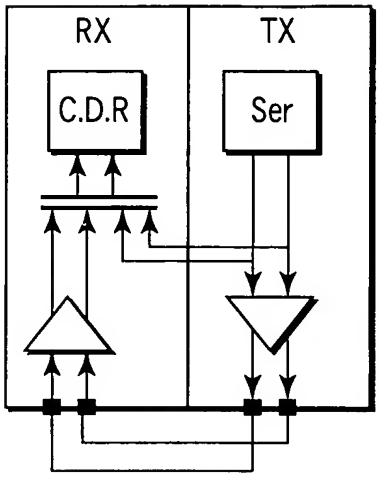


FIG. 15 PRIOR ART

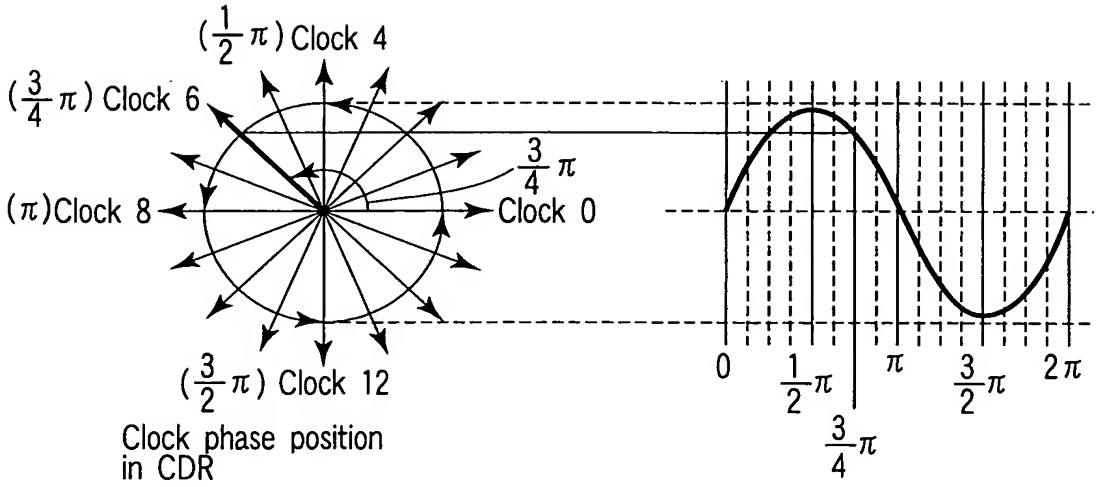


FIG. 16 PRIOR ART

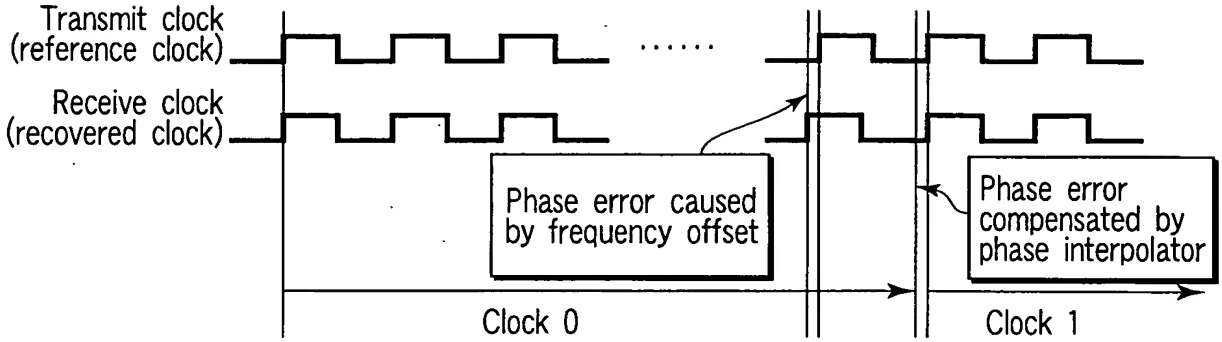


FIG. 17 PRIOR ART

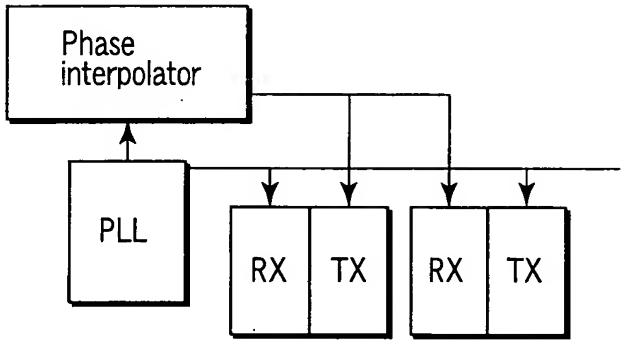


FIG. 18

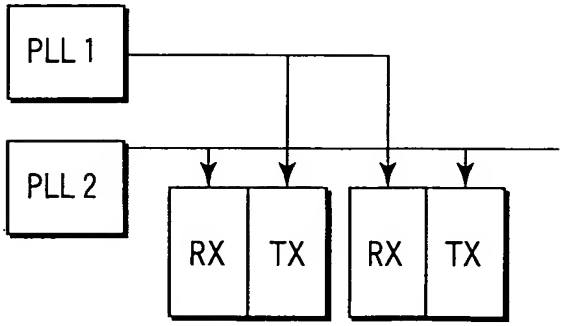


FIG. 19